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EXAMINER
LAI, MICHAEL C

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<table>
<tr><td rowspan="3">Office Action Summary</td><td>Application No.
10/754,098</td><td>Applicant(s)
KNAUERHASE ET AL.</td></tr>
<tr><td>Examiner
MICHAEL C. LAI</td><td>Art Unit
2157</td></tr>
</table>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>24 April 2008</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-24,26-35,37</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-24,26-35,37</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to communication filed on 04/24/2008.

Claims 1-24, 26-35, 37 have been examined.

Response to Amendment

2. The examiner has acknowledged the amended claims 1, 9, 11, 14, 16, 27, and

cancelled claims 25, 36. Claims 1-24, 26-35, 37 are pending. The objections to

claims 11 and 14 have been corrected and are withdrawn accordingly.

Response to Arguments

3. Applicant's arguments with respect to the specification objections are persuasive.

The specification objections are withdrawn accordingly. Applicant's arguments

with respect to the claims have been considered but are moot in view of the new

ground(s) of rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5-16, and 27 are rejected under 35 U.S.C. 102(b) as being

anticipated by Shorter (US 5,063,500, hereinafter Shorter).

Regarding claim 1, Shorter discloses a service apparatus implemented in a

machine, comprising:

a service request receiver to receive a request for a first service [col. 5,

lines 27-35, the pool manager at the host.];

a storage [FIG. 1 and col. 6, lines 58-62, IBM 360/370 has a storage];

a set of virtual machines stored in the storage, each virtual machine to

implement a service [FIGs. 5, 6A, 6B, and col. 11, lines 9-18];

a service manager to manage the set of virtual machines [FIG. 5 and col.

10, lines 38-59, the VMPM 46] and to select a first virtual machine from

a plurality of virtual machines offering the first service responsive to the

request [abstract, (1) and (2)]; and

a transmitter to return an access to the first virtual machine in the set of

virtual machines as a response to the request for the first service [col.

5, lines 43-56, virtual machine assignment and inter-program

communication].

Regarding claim 2, Shorter discloses a service apparatus according to claim

1, wherein: the service apparatus further comprises:

a database of service provider data [FIG. 5, 6A, 6B, and col. 11, lines 9-

18. Each virtual machine performs a service. A list of virtual machine

is equivalent to a database of service provider data.]; and

an image constructor to use the database to construct an image [col. 10,

lines 45-54, each virtual machine presenting a complete image of a

computer to the VM operating system implies that there is an image

constructor]; and

the service manager is operative to install the image as the first virtual

machine in the set of virtual machines [col. 10, lines 45-54].

Regarding claim 3, Shorter discloses a service apparatus according to claim

1, wherein:

the service apparatus further comprises a database of images [FIG. 5, 6A,

6B, and col. 11, lines 9-18. Each virtual machine performs a service. A

list of virtual machine is equivalent to a database of service provider

data, also each virtual machine presenting a complete image of a

computer to the VM operating system.]; and

the service manager is operative to install a first image from the database

of images as the first virtual machine in the set of virtual machines [col.

10, lines 45-54, each virtual machine presenting a complete image of a

computer to the VM operating system.].

Regarding claim 5, Shorter discloses a service apparatus according to claim

1, further comprising a deleter to delete the virtual machine [col. 1, lines 38-41,

adjusting the pool size implies creating/deleting virtual machines.] .

Regarding claim 6, Shorter discloses a service apparatus according to claim

1, the service manager including a table stored in the storage, the table to

indicate a state for each virtual machine in the set of virtual machines [FIG. 6A,

6B, the BUSY indicator].

Regarding claim 7, Shorter discloses a service apparatus according to claim

1, further comprising a list of services offered by the service apparatus, the list of

services to include at least the services offered by each virtual machine in the set

of virtual machines [FIG. 5, 6A, 6B, and col. 11, lines 9-18. Each virtual machine

performs a service. A list of virtual machine is equivalent to a list of service.].

Regarding claim 8, Shorter discloses a service apparatus according to claim

1, wherein at least one of the virtual machines implements the service and a

second service [col. 12, lines 59-65, VM01 implements both MAIL and

DIRECTORY services].

Regarding claim 9, Shorter discloses a system, comprising:

a network [FIG. 1, the SNA network];

a service request receiver to receive a request for a first service [col. 5,

lines 27-35, the pool manager at the host.];

a list of services offered [FIG. 5, 6A, 6B, and col. 11, lines 9-18. Each

virtual machine performs a service. A list of virtual machine is

equivalent to a list of service.];

a service manager to manage the set of virtual machines [FIG. 5 and col.

10, lines 38-59, the VMPM 46] and to select a first virtual machine from

a plurality of virtual machines offering the first service responsive to the

request [abstract, (1) and (2)]; and

a transmitter to return an access to the first virtual machine in the set of

virtual machines as a response to the request for the first service [col.

5, lines 43-56, virtual machine assignment].

Regarding claim 10, Shorter discloses a system according to claim 9, further

comprising a client machine coupled to the network, the client computer to send

the request [FIG. 1, Terminal 21].

Regarding claim 11, Shorter discloses a system according to claim 9, further

comprising at least one server farm machine [FIG. 1, hosts], each server farm

machine including:

> a storage [FIG. 1 and col. 6, lines 58-62, IBM 360/370 has a storage]; and
>
> at least one virtual machine from the set of virtual machines, stored in the
>
> > storage of the server farm machine, each virtual machine to implement
> >
> > a service [col. 6-7, lines 63-18, host 23, "MAIL" and "CALENDAR"
> >
> > applications].

Regarding claim 12, Shorter discloses a system according to claim 9, further

comprising a list of services offered by the system, the list of services to include

at least the services offered by each virtual machine in the set of virtual machines

[FIG. 5, 6A, 6B, and col. 11, lines 9-18. Each virtual machine performs a service.

A list of virtual machine is equivalent to a list of service.].

Claim 13 is of the same scope as claim 1. It is rejected for the same reason

as claim 1.

Regarding claim 14, Shorter discloses a system according to claim 9, further

comprising:

a service apparatus, the service apparatus to include the service request

receiver [col. 5, lines 27-35, the pool manager at the host.] and the transmitter

[col. 5, lines 43-56, virtual machine assignment];

at least one server farm machine [FIG. 1, hosts], each server farm

machine to include:

a storage [FIG. 1 and col. 6, lines 58-62, IBM 360/370 has a storage];

and

at least one virtual machine from the set of virtual machines, stored in

the storage of the server farm machine, each virtual machine to implement

a service [col. 6-7, lines 63-18, host 23, "MAIL" and "CALENDAR"

applications]; and

a management machine, the management machine to include the

service manager [FIG. 5 and col. 10, lines 38-59, the VMPM 46].

Claim 15 is of the same scope as claim 8. It is rejected for the same reason

as claim 8.

Regarding claim 16, Shorter discloses a method, comprising:

receiving a request for a service [col. 5, lines 27-35, the pool manager at

the host.];

accessing a list of services offered by a set of virtual machines [col. 11,

lines 61-66, scanning the control block.];

determining if the requested service is in the list of services [col. 11-12,

lines 61-3]; and

if the requested service is in the list of services:

determining a plurality of virtual machine offering the requested

service [col. 12, lines 54-65];

selecting one of the plurality of virtual machines [abstract, (1) and

(2)]; and

returning an identifier for the selected virtual machine offering the

requested service [col. 12, lines 59-65].

Claim 27 is of the same scope as claim 16. It is rejected for the same reason

as for claim 16.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art
are such that the subject matter as a whole would have been obvious at the time the invention was made to
a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be
negatived by the manner in which the invention was made.

7. Claims 4, 26, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Shorter as applied to claim 1.

Regarding claim 4, Shorter discloses a service apparatus according to claim

1, but silent about further comprising an archiver to archive the virtual machine.

Official Notice is taken for archiving the virtual machine, which is a well known

technique in resource management. Thus it would have been obvious to one of

ordinary skill in the art at the time the invention was made to try to archive the

virtual machine for the purpose of saving memory by swapping inactive virtual

machines out of the processor and active memory, thereby those virtual machine

can be restored without re-instantiation.

Regarding claim 26, Shorter discloses a method according to claim 16,

wherein determining the virtual machine includes: determining if the virtual

machine is active, sleeping [FIG. 6A, 6B, the BUSY indicator is YES or NO]; and

if the requested machine is sleeping, activating the virtual machine [FIG. 6A, 6B,

the BUSY indicator from NO to YES]. Shorter is silent about determining if the

virtual machine is archived and if the requested machine is archived, activating

the virtual machine. Official Notice is taken for determining if the virtual machine

is archived and if the requested machine is archived, activating the virtual

machine, which is a well known technique in resource management. Thus it

would have been obvious to one of ordinary skill in the art at the time the

invention was made to try to determine if the virtual machine is archived and if

the requested machine is archived, activating the virtual machine for the purpose

of saving memory by swapping inactive virtual machines out of the processor and

active memory, thereby those virtual machines can be restored without re-

instantiation.

Claim 37 is of the same scope as claim 26. It is rejected for the same reason

as for claim 26.

8. Claims 17, 20-24, 28 and 31-35 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Shorter as applied to claim 16, in view of Ottati (US 6,704,764

B1, hereinafter Ottati), and further in view of Bulson et al. (US 2005/0060704 A1,
hereinafter Bulson)..

Regarding claim 17, Shorter discloses a method according to claim 16, further
comprising, if the requested service is not in the list of services, assign a virtual
machine to service the request and returning an identifier for the virtual machine
[col. 5, lines 37-42, and col. 12, lines 59-65]. But Shorter is silent about creating
an image for a new virtual machine that offers the requested service and
installing the image for the new virtual machine. However, Ottati teaches if a
virtual machine is unavailable then spawning and loading a new virtual machine
to instantiate a thread corresponding to the requested service [claim 1 and col. 6,
lines 11-27]. Thus it would have been obvious to one of ordinary skill in the art at
the time the invention was made to create and install a new virtual machine for
the purpose of serving any new service request on the fly by dynamically
managing a pool of virtual machines.

Shorter and Ottati fail to disclose returning an identifier for the virtual machine
includes returning an identifier for the new virtual machine. However, Bulson
teaches returning a handle (e.g., an identifier) of the job virtual machine to the job
management service, so that the job management service can communicate
directly with the job virtual machine [para. 0037]. Thus it would have been
obvious to a person with ordinary skill in the art at the time the invention was
made to incorporate Bulson's teaching into Sorter's and Ottati's method for the
purpose of communicating directly with the new virtual machine by returning an

identifier for the new virtual machine, thereby providing a more efficient

communication system [para. 0037].

Regarding claim 20, Shorter, Ottati, and Bulson further disclose selecting one

of a set of machines to support the new virtual machine and installing the image

for the new virtual machine in the selected machine (it is inherent for installing an

image that one must make decision what machines to install).

Regarding claim 21, Shorter, Ottati, and Bulson disclose the claimed

invention except for wherein selecting one of a set of machines includes

selecting the selected machine to balance loads on the machines in the set of

machines. However, Ottati teaches load balancing in a distributed system

[abstract]. Thus it would have been obvious to one of ordinary skill in the art at

the time the invention was made to optimize system performance by load

balancing the set of machines.

Regarding claim 22, Shorter, Ottati, and Bulson further disclose wherein

creating an image includes selecting a combination of software packages that

define the new virtual machine to offer the requested service [this is inherent].

Regarding claim 23, Shorter, Ottati, and Bulson disclose the claimed

invention except for creating an image includes copying the image for the new

virtual machine from a set of pre-constructed images. It would have been

obvious to one of ordinary skill in the art at the time the invention was made to

copy the image for the new virtual machine from a set of pre-constructed images

for the purpose of re-using existing software images, thereby saving operating cost.

Regarding claim 24, Shorter discloses a method according to claim 16, wherein: determining the virtual machine offering the requested service includes: determining that a new virtual machine should offer the requested service [col. 5, lines 37-56, and col. 12, lines 59-65]. But Shorter is silent about creating an image for a new virtual machine that offers the requested service and installing the image for the new virtual machine. However, Ottati teaches if a virtual machine is unavailable then spawning and loading a new virtual machine to instantiate a thread corresponding to the requested service [claim 1 and col. 6, lines 11-27]. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to create and install a new virtual machine for the purpose of serving any new service request on the fly by dynamically managing a pool of virtual machines.

Shorter and Ottati fail to disclose returning an identifier for the virtual machine includes returning an identifier for the new virtual machine. However, Bulson teaches returning a handle (e.g., an identifier) of the job virtual machine to the job management service, so that the job management service can communicate directly with the job virtual machine [para. 0037]. Thus it would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Bulson's teaching into Sorter's and Ottati's method for the purpose of communicating directly with the new virtual machine by returning an

identifier for the new virtual machine, thereby providing a more efficient

communication system [para. 0037].

Claim 28 is of the same scope as claim 17. It is rejected for the same reason

as for claim 17.

Claim 31 is of the same scope as claim 20. It is rejected for the same reason

as for claim 20.

Claim 32 is of the same scope as claim 21. It is rejected for the same reason

as for claim 21.

Claim 33 is of the same scope as claim 22. It is rejected for the same reason

as for claim 2.

Claim 34 is of the same scope as claim 23. It is rejected for the same reason

as for claim 23.

Claim 35 is of the same scope as claim 24. It is rejected for the same reason

as for claim 24.

9. Claims 18-19 and 29-30 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Shorter, in view of Ottati and Bulson as applied to claim 17,

and further in view of Edstrom et al. (US 2002/0013827 A1, hereinafter Edstrom).

Regarding claim 18, Shorter-Ottati-Bulson disclose a method according to

claim, but are silent about further comprising adding the requested service to the

list of services. However, Edstrom teaches adding the desired service to a list of

subscribed-to services [para. 0102, lines 14-17]. Thus it would have been

obvious to one of ordinary skill in the art at the time the invention was made to

add the requested service to the list of services for the purpose of providing

faster and more efficient services in the future by updating the service list.

Regarding claim 19, Shorter-Ottati-Bulson-Edstrom further disclose wherein

adding the requested service includes identifying the new virtual machine in the

list of services as offering the requested service [this is inherent].

Claim 29 is of the same scope as claim 18. It is rejected for the same reason

as for claim 18.

Claim 30 is of the same scope as claim 19. It is rejected for the same reason

as for claim 19.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Applicant is reminded that in amending in response to a

rejection of claims, the patentable novelty must be clearly shown in view of the

state of the art disclosed by the references cited and the objection made.

Applicant must show how the amendments avoid such references and

objections. See 37 CFR 1.111(c).

11. Nageswaran, US Patent Number 5,991,792, has taught a method dynamically

managing a thread pool of reusable threads in a computer system.

Examiner's Note: Examiner has cited particular columns and line numbers in

the references applied to the claims above for the convenience of the applicant.

Although the specified citations are representative of the teachings of the art and

are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Lai whose telephone number is (571) 270-3236. The examiner can normally be reached on M-F 8:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael C. Lai
14JUL2008

/Ario Etienne/
Supervisory Patent Examiner, Art Unit 2157